the establishment of special institutions having no other object than the search after new truth. Their administration would be difficult. The right men can be found for the work, but can the right electors be found? Ardent searchers after a more intimate knowledge of nature do still live, will ever live; but what of First Commissioners of Works like—but I need not name him? What of Lords of the Treasury who refused the request of a great physicist for 150*l.* for the investigation of the tides? Yet these gentlemen assist in governing a maritime state of some importance. Such electors as these are not within my view, and, if they were, how of the detailed management? Men given up to research are not to be tied by the common rules of official life; to be compelled to report in annual blue books the exact measure of work they have done; to show how many drachms of oil of vitriol they have used, and account for every ounce of platinum.

Special institutions will be founded, but they will owe their origin to private individuals like Sir Josiah Mason; who, having taken into their confidence the chiefs of the world of science in making the appointments, will speak to the masters of research in this wise:—

"I have built a house for you replete with every requirement for your work; I have provided you with such assistants as you have asked for; I have given you an income placing within your reach every reasonable comfort. Occupy your lives in the study of nature. If you succeed in your efforts to attain to new truth, the world will be the gainer. If you fail, your efforts will be enough reward for me."

Such language as this will be surely one day heard. In this fortunate town it is already heard. During the past year a member of this Society, Mr. Fulford, has taken a house, and, having admirably fitted it up, has handed it over to our two distinguished associates, Dr. Gore and Dr. Norris, in order that they may enjoy at least the requisite structural conveniences for the prosecution of research. This building is called the "Institute of Scientific Research."

I must, however, remind you that this noble enterprise must be supplemented by some such efforts in the way of endowment as those now made by this Society; and that those who work even in the highest sphere are bound by the same necessities as bind other men.

SCIENTIFIC SERIALS

Annalen der Physik und Chemie, No. 12 (December, first No.).—On the density and tension of saturated vapour, by A. Wüllner and O. Grotrian.—On the application of the electrodynamic potential to determination of the ponderomotive and electromotive forces, by R. Clausius.—On friction in free liquid surfaces, by A. Oberbeck.—Simple methods and instruments for resistance-measurements, especially in electrolytes, by F. Kohlrausch.—Influence of temperature on the phenomena of charge of a liquid cell acting as condenser, by H. Herwig.—On the modes of electric discharge in gases, by O. Lehmann.—On the electric discharge in liquid insulators, by W. Holtz.—On electric figures on the surface of liquids, by the same.—On the increase of danger from lightning and its probable causes, by the same.—On a microprismatic method for distinction of solid substances, by O. Maschke.—Note on Herr Weber's reply, by A. Winkelmann.

Reale Istituto Lombardo di Scienze e Lettere. Rendiconti. Vol. xii., fasc. xix.—The Leprosy of Upper Italy, especially of Comacchio (continued), by Prof. Sangalli.—Influence of traction and vibration of a metallic wire on its electric conductivity, by Dr. de Marchi.—On a case of twisted neck; a contribution to the doctrine of transport of spinal influence and to establishment of a hypothesis for its explanation, by Prof. de Giovanni.

Zeitschrift für wissenschaftliche Zoologie, November, 1880, contains: Dr. H. von Ihering, on the affinities and kinship of the Cephalopods.—Dr. J. Bellonci, on the origin of the optic nerve and on the minute structure of the "tectum opticum" in the Teleostei (Plates 1 and 2).—Dr. D. Sochaczewer, on the organ of smell in the terrestrial pulmonates (Plate 3).—Dr. Fritz Müller, on the case-making Trichoptera larvæ of the Province of Santa Catharina (Plates 4 and 5), translated by his brother, Dr. Hermann Müller, from the memoirs in Portuguese in the Archivos de Museu National, Rio de Janeiro.—Dr. William Marshall, researches in the sponge groups, Dysideidæ and Phoriospongiæ (Plates 6 to 8).—Prof. Dr. Krause, on two very early human embryos (Plate 9).—Dr. H. Simroth, on the nervous system in the foot of *Paludina vivipara*, with a woodcut of the nerves as dissected out.

Revue internationale des Sciences biologiques, December 1880 contains:—A. de la Calle, on the formation of language (continued).—M. Decatte, microcephalism, from the point of view of atavism.—M. Zaborowski, historical sketch of the relative knowledge possessed by the ancients and in mediæval times of the large monkeys.—Notices of learned societies.—French Association for the Advancement of Science (the Rheims Meeting).—The Academy of Sciences, Paris.

Schriften der physikalisch-ökonomischen Gesellschaft zu Königsberg (1877, ii.; 1878, i. and ii.).—These parts contain the following papers:—On Baron von Richthofen's loess theory and the alleged steppe character of Europe at the close of the Glacial period, by Dr. A. Jentzsch.—Observations of the station for measuring the temperature of the soil in various depths, at the Königsberg Botanical Gardens, by Prof. E. Dorn.—On the prehistoric-archæological work done by the Society, by Otto Tischler.—On the commercial routes of the ancients to the amber country, by Dr. Krosta.—On the physics of the soil, by Dr. von Liebenberg.—On the discoveries in prehistoric tombs at Fürstenwalde, by Otto Tischler.—On hair-covered human beings and the abnormal growth of hair, by Prof. Hildebrandt.—On the marine fauna near the Prussian coast, by Prof. Zaddach.—On the alleged steppe character of Central Europe, by Dr. Jentzsch.—On the state of civilisation in Denmark during the first centuries after Christ, by O. Tischler.—On Darwin's theory, by Herr Czwalina.—On East Prussian burial-grounds, by O. Tischler.—On the fauna of Madagascar, by Prof. Zaddach.—On the intra-Mercurial planet, by Dr. Franz.—On the geological maps at the Paris Exhibition, by Dr. Jentzsch.—On some special geological maps of Germany, by the same.—On the principles of the kinetic theory of gases, by Dr. Saalschütz.

SOCIETIES AND ACADEMIES

LONDON

Chemical Society, January 20.—Prof. H. E. Roscoe, president, in the chair.—The president announced that the Faraday lecture would be delivered by Prof. Helmholtz in the Royal Institution, On the Modern Development of Faraday's Conception of Electricity. The following papers were read:—On pentathionic acid, by Mr. V. Lewes. The author has succeeded in obtaining beautifully crystallised barium and potassium pentathionates by partially neutralising Wackenroder's solution and evaporation *in vacuo*.—A preliminary note on some hydrocarbons from rosin spirit, by Dr. Armstrong. Cymene, toluene, and metaxylene were found to be present. The hydrocarbons insoluble in sulphuric acid are probably hexhydrides of hydrocarbons of the benzene series. The author does not consider that rosin is directly derived from terpene.—On the determination of the relative weight of single molecules, by Dr. Vogel of San Francisco.—On the synthetical production of ammonia by the combination of hydrogen and nitrogen in presence of heated spongy platinum, by G. S. Johnson. About 0·0144 grm. of ammonia were obtained in two and a half hours.—On the oxidation of organic matter in water, by A. Downes.—Analyses of Queensland soils, by Prof. A. Liversidge. These analyses are interesting, as the soils include samples from districts which were exempt from the disease prevalent in the sugar plantations around.—On the volumes of some compounds of the benzene naphthalene, anthracene, and phenanthrene series, by Dr. Ramsay.—On the atomic volume of nitrogen, by Dr. Ramsay.—On a new theory of the conversion of bar iron into steel by the cementation process, by Dr. Marsden. The author thinks that carbon diffuses in an impalpable powder through the heated iron.—On the action of sulphydrate of potassium on chloral hydrate, by W. W. J. Nicol. Thioglyoxylic and thioformic acids are formed.

Zoological Society, January 18.—Prof. W. H. Flower, LL.D., F.R.S., president, in the chair.—The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of December, 1880, amongst which special attention was called to a young female Red Wolf (*Canis jubatus*) from the Argentine Republic, presented by Mr. W. Petty of Monte Video, being the second example of this scarce animal received, and to a Pig from Brooker Island, Louisiade Archipelago, presented by Lieut. de Hoghton, of H.M.S.

Beagle.—A paper by Mr. P. L. Sclater and Dr. G. Hartlaub was read, on the birds collected in Socotra by Prof. I. B. Balfour in the early part of the year 1880. The collection contained 124 examples referable to thirty-four species. Of these seven of the Passeres appeared to be new, and were proposed to be called *Cisticola incana, Drymœca hæsitata, Lanius uncinatus, Cinnyris Balfouri, Passer insularis, Rhynchostruthus Socotranus*, and *Amydrus frater*.—Mr. A. G. Butler read a paper on the lepidoptera collected in Socotra by Prof. I. B. Balfour. The collection contained twenty-four specimens referable to thirteen species, seven of which were stated to be new to science.—Mr. W. A. Forbes read a paper on some points in the anatomy of the Koala (*Phascolarctos cinereus*), as observed in the specimen recently living in the Society's Gardens.—A communication was read from Mr. R. Bowdler Sharpe, in which was given the description of a new form of the family *Timeliidæ*, from Madagascar, proposed to be called *Neomixis*.—A communication was read from Dr. John Scully containing an account of the mammals of Gilgit, a district in the extreme north-western part of Kashmir. Thirty three species were enumerated, and notes on their vertical ranges and habits were added. The mammals of Gilgit were shown to consist of an intermixture of Central Asiatic and Himalayan species, as might have been expected from the position of the country. Two species (a Bat and a Vole), apparently new to science, were named respectively *Harpiocephalus tubinaris* and *Arvicola Blanfordi*.

Meteorological Society, January 19.—Mr. G. J. Symons, F.R.S., president, in the chair.—The report of the Council for the year 1880, which was read by the Secretary, refers to subjects of considerable importance, and affords substantial evidence of the interest taken in meteorology by the scientific and general public. Amongst these may be mentioned the great success of the new climatological stations, as shown by their increased number and by the regularity and care with which the observations have been made and recorded, and the returns forwarded to the Society. The Council also advert to the number of new and improved instruments exhibited at the meeting held in March last, to the increase in the number of Fellows, fifty-two having been elected during the year, and finally the numerous papers which have been sent to the Society from various parts of the world, embracing records of the climate of several important localities, respecting which but little has hitherto been known in this country.—After a vote of thanks had been passed to the Council for their services during the year, and to the Institution of Civil Engineers for allowing free use of their rooms, the President delivered his address, in which he traced the history of English meteorological societies from 1823 to 1880. The earliest English effort at forming an English meteorological society, or at any rate at securing observations made with comparable instruments recorded upon a uniform system, was made in 1723 by Dr. James Jurin, who was then secretary to the Royal Society. In the *Philosophical Transactions* for that year will be found a Latin address by Dr. Jurin, in which he anticipates nearly all the conditions which are now considered essential for comparable observations. This appeal did not lead to much being done, and in 1744 another attempt was made by Mr. Roger Pickering, F.R.S., who read before the Royal Society a paper entitled "Scheme of a Diary of the Weather, together with Drafts and Descriptions of Machines subservient thereunto." The Meteorological Society of the Palatinate was established in 1780 under the auspices of the Elector Charles Theodore, who not only gave it the support of his public patronage, but entered with spirit and ability into its pursuits and furnished it with the means of defraying the expense of instruments of the best construction, which were gratuitously distributed to all parts of Europe and even to America. One of the first acts of the Association was to write to all the principal universities, scientific academies, and colleges, soliciting their co-operation and offering to present them with all the necessary instruments properly verified by standards and free of expense. The offer was accepted by thirty societies, and the list of distinguished men who undertook to make the observations shows the importance which was attached to the plan and the zeal with which it was promoted in every part of the Continent. In 1823 the first meeting of the Meteorological Society of London was held, and was attended by Luke Howard, Thomas Forster, Dr. Birkbeck, and others. After 1824 the Society languished, but it was never regularly dissolved. Owing to several letters and articles which appeared in *Loudon's Magazine of Natural History* a meeting was held on November 15, 1836, at which the Society was revived, Mr. W. H. White appointed secretary, and regular meetings resumed. Application was made to the Royal Society for permission to compare the instruments of the Society with the Royal Society's standards, and leave was granted on March 13, 1838. A volume of *Transactions* was published in 1839, and among other articles contains one entitled "Remarks on the Present State of Meteorological Science, by John Ruskin." The cost of the publication of this volume exhausted the funds of the Society, but in 1841 Mr. Gutch undertook personally the pecuniary risk of a new publication entitled the *Quarterly Journal of Meteorology*, but this does not appear to have been very successful, owing to the high rate of postage. Shortly after this the Society practically came to an end. On April 3, 1850, a meeting of some friends of the science was convened by Dr. Lee at Hartwell, when the British Meteorological Society was established, and Mr. S. C. Whitbread elected president. The first general meeting of the Members was not held till March 25, 1851; but in the meanwhile several important steps had been taken by the Council. Annual Reports were published from 1851 to 1861, and since then five volumes of the *Proceedings* and six volumes of the *Quarterly Journal* have been published. Up to 1858 absolutely nothing had been done towards forming a library, but in 1862 a catalogue was published containing about 200 titles. In 1876 a new catalogue was issued, which extends to eighty pages and contains over 1200 entries. On January 27, 1866, the Society obtained a Royal Charter of Incorporation, and has since been known as "the Meteorological Society." On April 4, 1872, the Council resolved upon taking a room for an office and for the protection of the library, and appointed Mr. W. Marriott as their Assistant Secretary. The work has now become so great that the Society has been obliged to take an additional room and to engage three computers. The subsequent eight years have been characterised by great progress. A series of second order stations has been organised which are systematically inspected, and at which strictly comparable observations are made. On January 1, 1880, another and larger series of stations—called climatological—was started, at which the observations are less onerous than those at the second order stations, but at which they are required to be equally accurate. Observations on natural periodical phenomena are also made at many places, and discussed yearly by the Rev. T. A. Preston. At the request of the Society a conference has been appointed consisting of delegates from several other societies to prepare accurate instructions respecting the erection of lightning conductors. At the conclusion of the President's address the following gentlemen were elected the officers and council for the ensuing year, viz.:—President—George James Symons, F.R.S. Vice-presidents: Edward Ernest Dymond, William Ellis, F.R.A.S., Joseph Henry Gilbert, F.R.S., Charles Greaves, M.Inst. C.E., F.G.S. Treasurer: Henry Perigal, F.R.A.S. Trustees: Sir Antonio Brady, F.G.S., Stephen William Silver, F.R.G.S. Secretaries: Robert Henry Scott, F.R.S., John William Tripe, M.D. Foreign Secretary: John Knox Laughton, M.A., F.R.A.S., F.R.G.S. Council: Edmund Douglas Archibald, M.A., Arthur Brewin, F.R.A.S., Henry Storks Eaton, M.A., Rogers Field, B.A., M.Inst. C.E., Frederic Gaster, Baldwin Latham, M.Inst.C.E., F.G.S., Robert John Lecky, F.R.A.S., Edward Mawley, Hon. Francis Albert Rollo Russell, M.A., Richard Strachan, George Mathews Whipple, B.Sc., F.R.A.S., Charles Theodore Williams, M.A., M.D.

Entomological Society, Annual Meeting, January 19.—Sir John Lubbock, Bart., F.R.S., &c., president, in the chair.—The President delivered his annual address, and the following gentlemen were elected as officers for the ensuing year:—President, H. T. Stainton, F.R.S.; Treasurer, E. Saunders, F.L.S.; Librarian, F. Grut, F.L.S.; Secretaries: E. A. Fitch, F.L.S., and W. F. Kirby, F.L.S.; Council: W. Cole; W. L. Distant, M.A.I.; F. du Cane Godman, F.L.S.; Sir John Lubbock, Bart., F.R.S., &c.; R. Meldola, F.R.A.S.; O. Salvin, M.A., F.R.S.; F. P. Pascoe, F.L.S.; R. Trimen, F.L.S.

Victoria (Philosophical) Institute, January 17.—A paper on Pliocene man in America, by Dr. Southall of Virginia, U.S., was read. In it he showed that the evidence brought forward as to the existence of such was wholly unreliable; the same ground was taken in special communications from the Duke of Argyll, K.G., Principal Dawson, F.R.S., of Montreal, Prof. Hughes (Woodwardian Professor of Geology at Cambridge), and Mr. Whitley, C.E.; also by Mr. S. R. Pattison, F.G.S.,

and Mr. Hall, F.R.G.S., who had examined the evidences on the spot, and by the Rev. J. M. Mello, F.G.S., Mr. T. K. Callard, F.G.S., and Mr. E. Charlesworth, F.G.S.—About twenty new Members were elected, bringing the total number to nearly 900.

Institution of Civil Engineers, January 18.—Mr. James Abernethy, F.R.S.E., president, in the chair.—The paper read was on deep winning of coal in South Wales, by Messrs. Thomas Forster Brown and George Frederick Adams, MM. Inst. C.E. The authors, who were professionally associated with Harris's Navigation Pits, the deepest winning in the district, described the operations as a fair example of the details connected with winning deep coals in South Wales. The depth of the lowest seam at present sunk to was 760 yards; the pits were each seventeen feet in diameter inside the walling. In addition to the depth a special feature was the thickness of hard and heavily-watered rock penetrated. Guide ropes, upon the Galloway principle, were used in sinking, and the value of this system was shown in the saving of over two minutes in ste dying the bowk at the bottom of the pit at depths of 475 and 530 yards, the total time occupied in clearance at the latter depth being three minutes twenty-six seconds. The method of dealing with the various feeders of water during sinking was described: one of the pits was drained by a hole bored by the diamond machine, which was put down, at a depth of 175 yards from the surface, for a farther depth of 860 feet.

VIENNA

Imperial Academy of Sciences, January 13.—Dr. Fitzinger in the chair.—On the lacunar resorption in diseased bones, by Dr. Pommer.—On the physiological significance of the transpiration of plants, by Herr Reinitzer.—On the influence of prussic acid on breathing and circulation, by Dr. Lazarski.—On the relations of homogeneous deformations of solid bodies to surfaces of reaction, by Dr. Finger.—Contributions to the photochemistry of silver chloride, by Dr. Eder and Herr Pizzighelli.—On a new derivative of gallic acid, by Dr. Oser and Herr Kalmann.—Influence of form of cathode on the distribution of phosphorescence-light (sealed packet of November 17, 1880), by Herr Goldstein.—On a tetra-hydrocinchonin acid, by Dr. Weidel.—Determination of magnetic and diamagnetic constants of liquids and gases in absolute measure, by Herr Schuhmeister.

January 20.—Herr von Burg in the chair.—Studies on caffein and theobromin (first part), by Prof. Maly and Herr Hinteregger.—Researches on the anatomy, physiology, and development of Sternaspis, by Dr. Vejdovsky.—The flight of Libellula; contribution to the anatomy and physiology of organs of flight in insects, by Herr Lendenfeld.—Research on kynurenic acid (first part), by Dr. Kretschy.—Action of hydrate cupric oxide on some kinds of sugar, by Prof. Habermann and Herr Hönig.

PARIS

Academy of Sciences, January 17.—M. Wurtz in the chair.—The following papers were read:—Contemporaneous production of native sulphur in the subsoil of Paris, by M. Daubrée. This sulphur occurs abundantly in the ground of the Place de la République, from 0·2m. to 3m. from the surface, and in a space 50m. by 15 to 20m.; one finds a breccia with thin incrusted fragments of crystalline sulphur. The product is due to simultaneous presence of the sulphate of lime of plaster-rubbish, and organic *débris*, with which the ancient moat of the centre of the city was filled up two centuries ago.—Order of appearance of the first vessels in the ear of Lolium (second part), by M. Trécul.—On the treatment of phylloxerised vines, by M. Marés. He finds very successful an application of dilute sulphocarbonate of potassium to the lower parts of the vines twice a year.—Discoveries in equatorial Africa; meeting of MM. de Brazza and Stanley; by MM. de Lesseps and de Quatrefages. M. de Brazza speaks of having descended the Congo and founded the station of Ntamo Ncouna, twelve marches from Ogôuué; it is the most advanced post in the heart of Africa, and will be an important centre for exploration, &c. He had met Stanley on November 7 near Vivi. Capt. Bloyet has established a station near Lake Touquerko.—Observations of the comet *f* 1880 (Pechulé) at Paris Observatory, by M. Bigourdan.—On the displacement of an invariable figure, by M. Darboux.—Integration in finite form of a new species of differential linear equations with variable coefficients, by M. André.—On the theory of vibrating plates, by M. Mathieu.—On complete combinations; number of complete combinations of *m* letters *n* to *n*, by M. Melon.—Remarks on an opinion attributed to me by a note of M. Cornu, by M. Gouy.—Minimum of the power of resolution of a prism, by M. Thollon.—On the production of intermittent luminous signals with the electric light, by M. Mercadier. One carbon is horizontal, and advances a little at each signal. The other is vertical, and is held in a peculiar clip at one end of a horizontal lever, to the other end of which is fixed a vertical rod with terminal friction roller working on a cam. The vertical carbon is connected with the battery by a wire spring, and it is dropped a little by the clip at certain positions of the cam. The cam may be turned by clockwork for regular signals, or with the hand, at a variable rate, for irregular.—Observations *àpropos* of M. Dunand's recent paper on reproducing speech with electric condensers, by M. Herz. He patented the use of a condenser as telephonic receiver on M. Dunand's principle in June last year.—Some facts to serve in the history of nitrification, by MM. Hautefeuille and Chappuis. Electric effluves, intense enough to quickly give much ozone in a mixture of oxygen and nitrogen, but not to form hyponitric acid, produce the new unstable pernitric acid. Using lower tensions, the formation of this acid is found to go side by side with that of ozone. Pernitric acid is decomposed at all temperatures, but at 130° the decomposition is complete in a few seconds (into hyponitric acid and oxygen). Numerous experiments seem to prove that in simultaneous production of ozone and pernitric acid by the effluve the gases have not been raised to a temperature near that named; where hyponitric acid is formed, that temperature has been passed. A consequence of the facts is that effluves corresponding to weak tensions may furnish nitric acid, ultimate product of decomposition of pernitric acid.—On the conservation of grain in reservoirs (continued), by M. Müntz. Oats kept in a ventilated granary thirty months had lost 7·2 per cent. more of fixed matter (chiefly starch) than oats kept the same time in a metallic reservoir (of 220 cubic m. capacity), having its lower part in a subsoil. In the sereservoirs there is a distillation towards the upper part. To get all the advantage of closed reservoirs there should be a comparatively dry grain, a perfect closure, and a maintenance of the walls at pretty constant temperature.—Study of the peat of crystalline strata of Finisterre, by M. de Molon.—On the parts of the pancreas capable of acting as ferments, by M. Béchamp. All the known properties of the pancreas are concentrated in the microzymas.—Anatomical researches on the digestive, nervous, and reproductive apparatus of Onchidia, by M. Joyeux Laffine.—Hypertrophy and multiplication of nuclei in hypertrophied cells of plants, by M. Prillieux.—On the production of *verglas*, by M. Minary. He thinks the theory needs correction. Instead of regarding water in a state of surfusion as composed only of liquid, he supposes it formed of a mixture of liquid and of solid molecules (of ice) held apart by some unknown cause. For the congelation to be complete when surfusion ceases, the ice of the mixture merely requires (in order to rise to 0°) a quantity of heat equal to the latent heat still conserved by the quantity of water in surfusion.

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